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Defining the ERP and CRM integrative value

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Abstract

The value of IT adoption has been and still is a crucial question for the decision on IT adoption. In this paper we suggest a research model that aims at defining the integrative value of adoption of Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) systems. The integrative value is described from the Resource Based View of the firm (RBV) and will be measured as impact on firm performance. The research model suggests six hypotheses that will be tested and analysed with data from a questionnaire among firms that have adopted both ERP and CRM systems in their organization. Due to the nature of the research model and the fact that it has not been tested in the past, the data analysis will be supported by Partial Least Squares (PLS). Our aim with this research project is that it will provide new knowledge on how integration between systems can positively influence value from IT investments, but also how different software such as ERP and CRM provides value to systems integration as well as process integration.

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1. Introduction

Enterprise Resource Planning (ERP) systems have been applied by many firms regardless size around the world as a key part of the organizational infrastructure. ERP encompass a wide range of software products supporting day-to-

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day business operations and decision-making [1]. ERP systems are expected to provide, seamless integration of processes across functional areas with improved workflow, standardization of various business practices, improved order management, accurate accounting of inventory, and better supply chain management [2]. However, these IT resources streamline and integrate internal business processes to improve efficiency only within firm's boundaries [3].

Customer Relationship Management (CRM) systems have exploded on the enterprise space in the past years, and some studies claim that they are the ultimate solution to the information exchange problem among firms [4,5].

In this study, CRM is an IT resource that can also be present in firm's IT portfolio as a thirty party resource. It is aimed to improve the relationship between firms and customers. The main purposes of CRM is customer relationship setting up, development and maintenance [6,7]. Because of their lower cost and ease of implementation and its use, CRM hold the promise of enabling information made from the CRM to be consumed in ERP and across the extended enterprise. CRM extend the original value proposition of ERP, allowing firms to build interactive relationships with its customers and bring together their previously separated information at very low cost [8,9]. Whereas CRM encompass the external part of the extended enterprise, and ERP encompass the internal part [4-6].

As more and more firms realize that they need to know deeply their customers in order to compete or survive, integrating CRM with ERP becomes a critical issue [10,11]. Although existing research have studied the importance and benefits of using ERP and CRM systems separately, they are limited in addressing the integration between these two IT resources as an important factor for firms to fully exploit the value of IT. Although few, some IS researchers have identified ERP and CRM integration as one of the most important IS fields for future research [3,6,7]. However none has investigated the integration thru a theoretically rigorous framework. To respond to this, this study aims to develop a theoretical model that attempts to measure ERP and CRM integrative value using a well-established IS theory - resource-based view (RBV). In doing so, we contribute to the IT value literature by examining through an original lens - the complementarity value of the integration of these two resources. Our work focuses on the overall question: How can integrative value from ERP and CRM systems be explained?

The remainder of the paper is organized as follows. In Section two, based on the literature review we provide a definition of ERP and CRM business value, followed by an overview of resource-based view of the firm that support our research model. Next, we present the proposed research model. Finally, future steps are defined.

2. Theoretical background (abbreviated)

2.1 ERP, CRM and firm performance

In reviewing earlier research focused on ERP and firm performance, researchers such as Mabert et al. [2] and Ranganathan and Brown [12] pointed out that most value in ERP use are in intangible areas such as increased interactions across the enterprise, quick response time for information, integration of business process, and availability and quality of information. In the same line Gattiker and Goodhue [1] and Rhodes et al. [13] reported that there are also improvements in communications, individual productivity, and management control. Studies conducted by Hitt et al. [14] and, Nicolau and Bhattacharya [15] found that ERP improves coordination between different units, efficiency of business process, cost efficiency and differentiation. Furthermore, both Zhang et al. [16] and, Bradford and Florin [17] established user satisfaction as an important determinant of ERP that positively impact on firm's performance. Another stream of research investigate tangible areas of ERP firm's performance basically following the "IT productivity paradox" paradigm (see Dedrick et al. [18] for a concise review). Traditional cost measures such as direct operating costs (ROA, ROE, COGS, SG&A, profit margin), inventory levels and cash management [14,15,19,20]. There are some econometric researches that studied tangible and intangible complementarily streams and assess a positive relationship between ERP and firm performance [21-24].

In reviewing CRM literature and firm performance, CRM represents a system for creating value for both the firm and its customers through the appropriate use of technology, data and customer knowledge [6,8,10]. Accordingly with Day and Van den Bulte [25], and Alshawi et al. [6] CRM brings together people, other resources and organizational capabilities to ensure connectivity between the company, its customers and collaborating firms. Several researchers have expressed concerns with the lack of research on the combination of IT resources such CRM with ERP systems that deliver most business value [20,26-28]. Some researchers assessed the CRM value as direct measures such the success at generating revenues from new products, reduction in cost of transacting with customers and level of repeat business with valuable customers [6,8-11,29,30].

While the existing studies have expanded the business value of ERP and CRM understanding, the results look only at these systems separately. The present study looks at the firm's IT complementarity to create unique valuable characteristics, which when used together can leverage firm's performance. Francalanci and Morabito [31] and Dong and Zhu [30] pointed out that most of the existing research on IT value focuses on the IT as a resource itself, but not on the much richer area of IT complementarity such as the integration value of ERP with CRM. They argue that with the growing of CRM systems, there should be a strong interest in assessing how to best integrate the functionality of these systems with ERP to improve firm performance [7,30,31].

We move forward the above stream and developed a research model to know if the business value generated by IT dependent upon the combination of complementary resources such as ERP and CRM.

2.2 ERP and CRM integrative value

A potential framework for extending the theoretical basis of IT value is the Resource-Based View (RBV) of the firm, which roots on economics and management rationales [21-23,32]. These two perspectives provide the development of a robust model to link both the ERP and CRM firm performance literature into a single model.

The RBV claims that firm resources are heterogeneous and disseminated across firms. When the firm resources are valuable, non-imitable and non-substitutable, they can explain the differences in firm performance [21-23,33,34].

The RBV has been used in the IS literature to explain IT business value, in which firm-specific sets of resources determine the firm's performance [21-23,35,36]. The present study uses the RBV as a frame of reference to develop a theoretical model to understand the extent to which ERP and CRM integration contribute to firm performance.

Some researchers have emphasized that an IT resource, such as ERP, is likely to affect firm performance only when it is deployed to created unique integrative complementarities with other IT resource, such as CRM systems. [37-39]. Integrative complementarity represents the enhancement of resource value, because a resource produces greater returns when integrated with another resource that by itself [7,32,38]. These researchers state that, it is only when two resources are used in a mutually complementary way that a firm enhance its competencies, been difficulty to imitate.

Although business components such as ERP and CRM systems that go into the firm's infrastructure are commodities, the process of integrating these components do sets a firm-specific infrastructure tailored difficult to substitute and be understood by competitors [7,33,40,41].

Integrating ERP and CRM systems could be particular difficult since it involves not only the local firm itself but also their customers. As the firm develops a new IT infrastructure it develops rules and procedures that goes beyond the firm boundaries [6,7,40,42,43]. The new business process that are supported by ERP integrated with CRM systems are like dominoes in a row. That is, each new transaction sets of a cascade of new events. As example - a marketing campaign generate a new sales order which triggers inventory levels, production order, purchase order, quality orders, invoices, etc. New processes that are valuable for firms to pursuit [6,14,21-24,44].

The ERP and CRM integrative value is grounded in the above reasons: the possibility of imitation and substitution decreases and new value chains are created, increasing firm performance which is consistent with RBV of the firm.

3. Model and Hypotheses

Since the RBV provides the rationales to define the ERP and CRM integrative value, we propose the following research model to investigate their effect on firm performance.

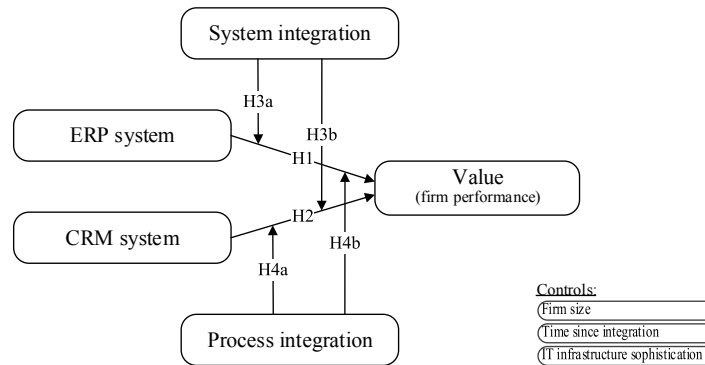
The model presented in Fig.1 aims to assess the integrative value by measuring how ERP and CRM systems are integrated and used in function of systems and processes integration.

Taking is consideration the theoretical background presented above, whereas ERP systems focus on internal process and are expected to affect internal firm's operations by decreasing internal costs, CRM systems focus on external, intra-firm's process efficiency and effectiveness by decreasing external coordination costs and reap the benefits of customer relationships. In this line we postulate the following two hypotheses:

H1: Firm's with greater ERP system functionality are more likely to find value from their information system.

H2: Firm's with greater CRM system functionality are more likely to find value from their information system.

Integrating ERP and CRM is very complex. An ERP systems generally embeds firm's business logic, where the routines, rules procedures such as procurement, fulfillment, approvals are made over electronic transactions, CRM functions must generally adapt to the logic and therefore a successfully integration between ERP and CRM systems is



considered to be valuable, heterogeneously distributed, difficult to be imitated and difficult to be substituted, which is in accordance with RBV rationales [21-23,30,44].

Fig.1. Research Model to assess ERP and CRM integrative value

Whereas system integration is the IT component that creates the correct links between different information systems and databases, process integration is the extent to which the business process of the two systems are tightly linked and standardized into what could be described as a single information system. Moreover although system integration facilitates the business process integration, by itself does not guarantee firm's high levels of business process integration. It is only when they are measured in conjunction that will have a positive impact on firm performance [12,30,37]. In this study we adopt the same perspective and define the moderating effect of both system integration and process integration. Hence, we postulate the following four hypotheses:

H3a: System integration will reinforce the positive relationship between ERP and the value of the firm's information system.

H3b: System integration will reinforce the positive relationship between CRM and the value of the firm's information system.

H4a: Business process integration will reinforce the positive relationship between ERP and the value of the firm's information system.

H4b: Business process integration will reinforce the positive relationship between CRM and the value of the firm's information system.

4. Controls

Prior studies suggest that three ancillary factors can influence ERP and CRM integrative value and firm performance. Firm size is used as a proxy for the resource base of the organization that may influence the integrative value and firm performance [45]. Time since both systems were integrated was included to measure the knowledge and experience that organizations obtain from working overtime [45]. IT related infrastructure sophistication assesses the differences in both generic and specialized systems that may affect the integrative value and impact on performance [45]. Hence, we will use three controls: Firm size, Time since integration, and IT infrastructure sophistication.

5. Research methodology (future work)

As the next steps for this research, we will develop an online questionnaire. Five research academics and five professional experts from ERP and CRM knowledge field will validate the content of the questionnaire. To assess constructs reliability, a pilot test with 30 firms and feedbacks will be incorporated. We plan to measure the constructs by using reflective items on a five-point Likert-type scale, ranging from 'strongly disagree' (1) to 'strongly agree' (5).

With the assistance of IDC, a world leading source for commercial information and insights on businesses, a large-scale survey will target several firms around Europe for data collection in June 2014. Due to the nature of the research model and the fact that it has not been tested in the past, data will be analyzed thru Partial Least Squares (PLS) [46].

6. Concluding remarks

In this paper we suggest a research model that aims at exploring the integrative value of ERP and CRM systems. It is a first attempt to produce knowledge on the overall research question: how can integrative value from ERP and CRM systems be explained. To deal with this question we presented in this paper the development of a theoretical model that attempts to measure ERP and CRM integrative value using a well-established IS theory - resource-based view (RBV). In doing so, we contribute to the IT value literature by examining through an original lens - the complementarity value of the integration of these two resources. Our work focuses on explaining how integrative value is gained from the two resources ERP and CRM systems as well as the impact they have on firm's performance. This project will continue with the development of the questionnaire and then analyses of collected data through the use PLS. The research project aims at producing contributions both to theory as well as practice by producing new knowledge on how integration between systems can positively influence value from IT investments, but also how different software such as ERP and CRM provides value to systems integration as well as process integration.

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